

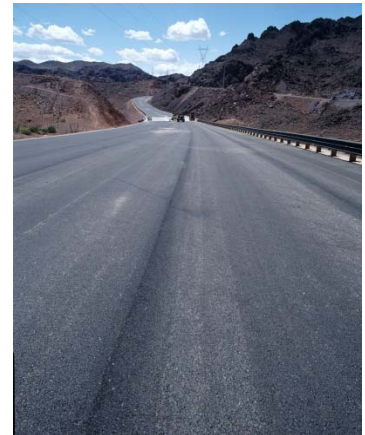
NEWSLETTER OCTOBER 2008



State Planning and Research (SPR) Projects

SPR-524, DEVELOPMENT OF MIX DESIGN PROCEDURES FOR GAP-GRADED ASPHALT-RUBBER ASPHALT CONCRETE

The study was conducted to identify and document modifications to the specification used to develop gap-graded asphalt rubber asphalt concrete (GG AR AC) mix designs and to develop and test improvements to provide a standard mix design method for use by contractors and consultants. Based on field performance data provided by the Arizona Department of Transportation (ADOT), the existing mix design method was successful and should serve as the standard for comparison of proposed improvements. Best practices were synthesized to develop proposed improvements. Three aggregate sources and two asphalt-rubber (AR) binders were used for initial testing of the existing (control) mix design method and of the proposed changes. The composition of the AR binders (rubber gradation and content) had more effect on the results than which mix design method was used. Changes to the AR AC mix design method consist primarily of making and curing Rice specimens in the same manner as Marshall specimens, tighter temperature ranges for mixing and compaction, incorporating Asphalt Institute calculations in a "User's Guide", and improving presentation.



SPR-608, DEVELOPMENT OF RATIONAL PAY FACTORS BASED ON CONCRETE COMPRESSIVE STRENGTH DATA



This research project addresses the opportunity to contain the escalating costs of concrete materials in construction projects. The report presents a comprehensive statistical evaluation of the compressive strength of concrete used in various sectors of the transportation infrastructure in Arizona. Several case studies were conducted based on actual field data to show that performance based specification procedures can be used to improve the quality control process while decreasing the overall construction costs. Acceptance criteria based on the percent within limit (PWL) and operational-characteristic curves (OC) were proposed and evaluated. Various pay factor equations were considered and the historical records were evaluated based on hypothetical pay factor equations.

The report also addresses the strengths and weaknesses associated with the present acceptance criteria in comparison to a PWL based method. Opportunities in sampling, optimization, operational-characteristics curves, and quality specification were discussed in detail. It is shown that the cost savings associated with both performance based specification and quality control sufficiently justify the amount of effort needed in order to implement these methodologies in the development of specifications.

COMPLETED PROJECTS

All recent published reports and many archival reports are available online at:
www.azdot.gov/TPD/ATRC/Publications/project_report_s/index.asp

ATRC LIBRARY

ATRC library information, including the library catalogue, is available online at:
<http://www.azdot.gov/TPD/ATRC/library/index.asp>

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The Arizona Transportation Research Center (ATRC) research program is guided by the ADOT Research Council. The responsibilities of the Council include: evaluation of research proposals for possible research program funding, evaluation of potential pooled fund studies, review of project technical advisory committee membership, and policy and strategic guidance to ATRC. Membership is voluntary. The members include:

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Hoover Dam bridge construction

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